

**What is claimed is:**

1. A population of insulin-producing cells made by a process comprising contacting non-insulin producing cells with a growth factor selected from the group consisting of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof.
2. The population of claim 1, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
3. The population of claim 1, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
4. The population of claim 1, wherein the non-insulin producing cells comprise non-islet cells.
5. The population of claim 1, wherein the non-insulin producing cells comprise pancreatic cells.
6. The population of claim 1, wherein the non-insulin producing cells comprise pancreatic acinar cells.
7. The population of claim 1, wherein the non-insulin producing cells comprise stem cells.
8. The population of claim 1, wherein the non-insulin producing cells comprise pancreatic stem cells.

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9. The population of claim 1, wherein the non-insulin producing cells are mammalian cells.
10. The population of claim 9, wherein the mammalian cells are human cells.
11. The population of claim 1, wherein the noninsulin-producing cells are contacted with the growth factor for at least twenty-four hours.
12. A population of insulin-producing cells made by a process comprising contacting noninsulin-producing cells with a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, or fragments thereof.
13. The population of claim 12, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
14. The population of claim 12, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
15. The population of claim 12, wherein the non-insulin producing cells comprise non-islet cells.
16. The population of claim 12, wherein the non-insulin producing cells comprise pancreatic cells.

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17. The population of claim 12, wherein the non-insulin producing cells comprise pancreatic acinar cells.
18. The population of claim 12, wherein the non-insulin producing cells comprise stem cells.
19. The population of claim 12, wherein the non-insulin producing cells comprise pancreatic stem cells.
20. The population of claim 12, wherein the non-insulin producing cells are mammalian cells.
21. The population of claim 20, wherein the mammalian cells are human cells.
22. The population of claim 1, wherein the noninsulin-producing cells are contacted with the growth factor for at least twenty-four hours.
23. A method of differentiating non-insulin producing cells into insulin producing cells, comprising contacting the non-insulin producing cells with a growth factor selected from the group consisting of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof.
24. The method of claim 23, wherein the non-insulin producing cells are contacted with the growth factor for at least twenty-four hours.

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25. The method of claim 23, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
26. The method of claim 23, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
27. A method of differentiating non-insulin producing cells into insulin producing cells, comprising contacting the non-insulin producing cells with a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, or fragments thereof.
28. The method of claim 27, wherein the non-insulin producing cells are contacted with the growth factor for at least twenty-four hours.
29. The method of claim 27, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
30. The method of claim 27, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
31. A method of enriching a population of cells for insulin-producing cells, comprising contacting the population of cells with a growth factor that differentiates noninsulin-producing cells into insulin-producing cells.
32. A method of promoting pancreatic amylase producing cells to produce both insulin and amylase, comprising contacting the pancreatic amylase producing cells with a growth factor selected from the group consisting

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of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof.

33. A method of promoting pancreatic amylase producing cells to produce both insulin and amylase, comprising contacting the pancreatic amylase producing cells with a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, and fragments thereof.

34. A method of treating diabetes in a subject diagnosed with Type 1 diabetes, comprising administering to the subject a growth factor selected from the group consisting of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof by continuous infusion for at least twenty-four hours.

35. The method of claims 34, wherein the growth factor differentiates non-insulin producing cells into insulin producing cells.

36. A method of treating diabetes in a subject diagnosed with Type 1 diabetes, comprising administering to the subject a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, and fragments thereof.

37. The method of claim 36, wherein the growth factor is administered by bolus at least once.

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38. The method of claims 36, wherein the growth factor differentiates non-insulin producing cells into insulin producing cells.
39. A method of treating diabetes in a subject, comprising
- (a) obtaining non-insulin producing cells from the subject being treated;
  - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin-producing cells; and
  - (c) administering the insulin-producing cells from step (b) to the diabetic subject.
40. The method of claim 39, wherein the non-insulin producing cells are pancreatic cells.
41. The method of claim 39, wherein the non-insulin producing cells are stem cells.
42. A method of treating diabetes in a subject, comprising
- (a) obtaining non-insulin producing cells from the subject being treated;
  - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells;
  - (c) altering the surface antigens of the insulin producing cells of step (b), thereby reducing the likelihood that the insulin producing cells will cause an immune response; and

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(d) administering the cells with altered surface antigens from step (c) to the diabetic subject.

43. The method of claim 42, wherein the non-insulin producing cells are pancreatic cells.

44. The method of claim 42, wherein the non-insulin producing cells are stem cells.

45. A method of treating diabetes in a subject, comprising

- (a) obtaining non-insulin producing cells from a donor;
- (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells; and
- (c) administering the insulin producing cells from step (b) to the diabetic subject.

46. The method of claim 45, wherein the donor is a cadaver.

47. The method of claim 45, where the non-insulin producing cells are pancreatic cells.

48. The method of claim 45, wherein the non-insulin producing cells are stem cells.

49. A method of treating diabetes in a subject, comprising

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- (a) obtaining non-insulin producing cells from a donor;
  - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells;
  - (c) altering the surface antigens of the insulin producing cells, thereby reducing the likelihood of that the insulin producing cells will cause an immune response; and
  - (d) administering the cells with altered surface antigens from step (c) to the diabetic subject.

50. The method of claim 49, wherein the donor is a cadaver.
51. The method of claims 49, wherein the non-insulin producing cells are pancreatic cells.
52. The method of claim 49, wherein the non-insulin producing cells are stem cells.

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